Sept. 26, 1950 R. S. BONSALL 2,523,340

PORTABLE RECORDING DEVICE

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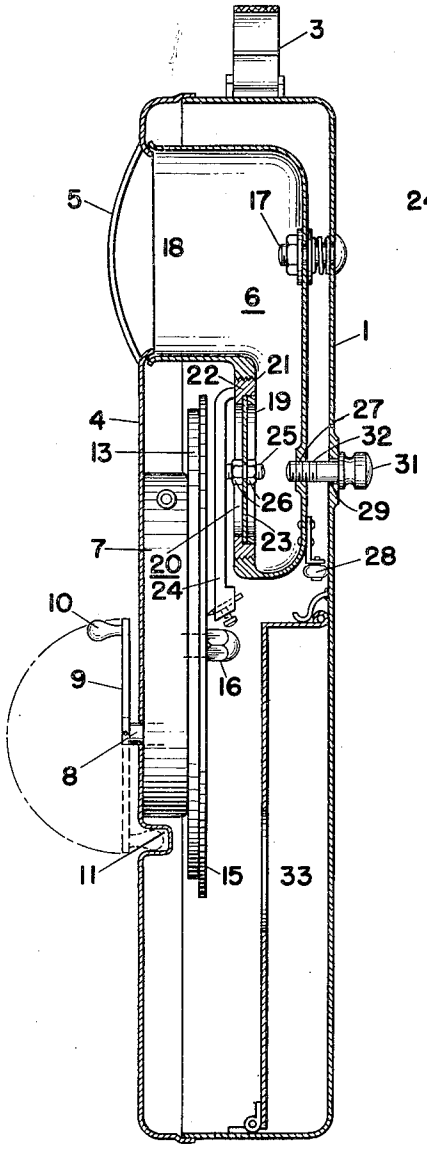


FIG. 2

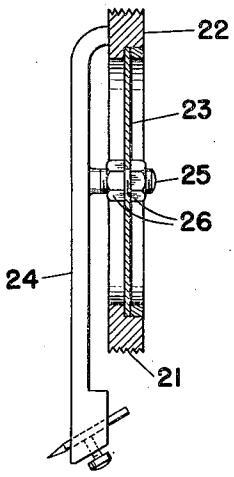


FIG. 4

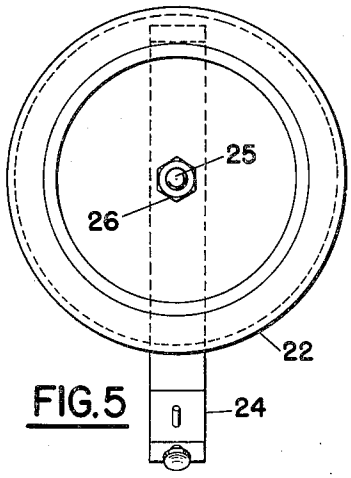


FIG. 5

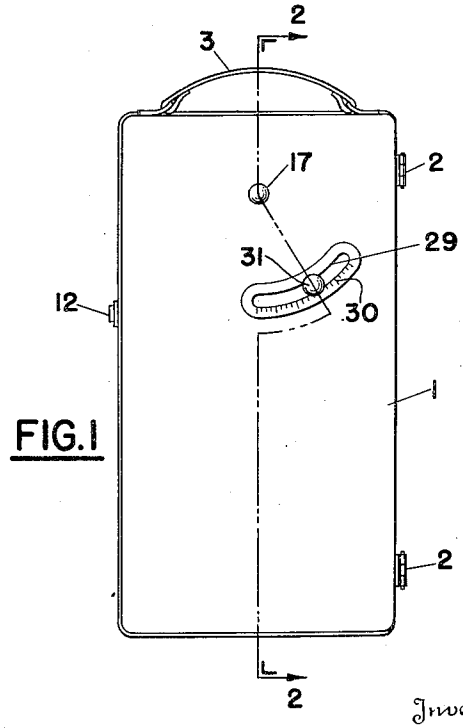


FIG. 1

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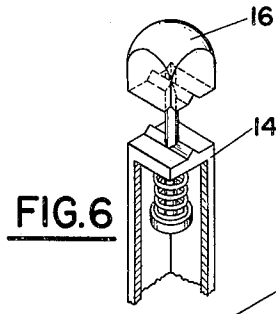


FIG. 6

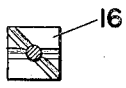


FIG. 7

FIG. 3

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UNITED STATES PATENT OFFICE

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PORTABLE RECORDING DEVICE

Robert Stewart Bonsall, United States Navy
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3 Claims. (Cl. 274—2)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

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This invention relates to portable recording devices which are particularly adaptable for pocket size construction.

The object of this invention is to construct a recording device having a compact arrangement of parts, and being light in weight, small enough to carry about the person and ready for instant use for either recording or playing back records.

Another object is to construct a portable recording device featuring simplicity, compactness and versatility, along with good fidelity and ease of operation.

Another object is to provide a pocket size portable recording and play-back device operated by a spring motor and having a compartment for spare recording discs.

Other and more specific objects will become apparent by reference to the following detailed description of one form of the invention as shown in the accompanying drawings, wherein:

Fig. 1 is a rear view of the present device;

Fig. 2 is a sectional view thereof, taken at the line 2—2 of Fig. 1;

Fig. 3 is a perspective view of the device on a reduced scale, opened up to show the arrangement of parts on the inside thereof;

Figs. 4 and 5 are two views of the diaphragm unit used, and

Figs. 6 and 7 are two detail views of the spindle-locking feature for holding the disc on the rotor drive plate.

Referring to the several views in the drawings wherein like parts are designated by the same numerals, the case 1 opens like a book about the hinges 2, and when closed may be carried by a handle 3. The front, or cover, 4 has a grated opening 5 near the top for the transmission of sounds into or out of the horn element or sound tube 6. The spring motor 7 is mounted on the inside of the cover below the grated opening, and its handle or shaft 8 extends through the cover and has a winding key 9 mounted thereon. The winding key 9 is hinged so that it may be folded away as shown by the dotted line in Fig. 2, with its handle 10 inserted into a pocket 11 formed in the cover. The starting push button 12 with means for locking it in depressed or operative position is provided on the edge of the cover and may be held depressed manually, or locked in depressed position for continuous operation. The motor has a rotor drive plate 13 with a square spindle 14 over which the disc 15 is mounted, and a locking device 16 for holding the disc in place. The horn element 6 is pivotally mounted on a spring friction bearing 17

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on the rear wall of the case as shown concentrically with the grated opening 5 when the case is closed, so that the large end 18 of the horn always registers with this opening. The body of the horn or sound tube is flattened as shown at 19 and has a diaphragm unit 20 mounted therein, as by a screw connection 21. The diaphragm unit comprises a diaphragm frame 22 in which the diaphragm 23 is mounted and a needle arm 24 fastened at one end to this frame and having conventional means (as shown) for holding the needle at the other end; it is connected to the center of the diaphragm by a threaded lug 25 made integral with it, which is adjustably fastened to the diaphragm by nuts 26. On the opposite or back side of this flattened portion of the horn is a threaded opening 27 and a tensioned roller 28 which is resiliently held against the back of the case. The back of the case has an arcuate slot 29 arranged concentrically with the friction bearing 17 and has graduation marks 30 along its side to show the position of the needle relative to the beginning and end of a particular record. A lock and play-back control knob 31 having a threaded stem 32 which is passed through this slot is threaded into the threaded opening 27 on the back of the flattened portion of the horn element. A compartment 33 is partitioned off in the lower part of the back of the case for extra recording discs.

In order to prepare this device for operation, the case is opened, a recording disc is removed from the compartment 33, placed over the spindle 14 and locked in place by the locking device 16. A recording needle is inserted in the recording arm 24, the case is closed, the motor wound up by means of the winding key 9, and the needle set into starting position by means of the lock and play-back control knob 31. The device is now ready for use in recording.

In order to operate the device, the starting button 12 is depressed and held down as long as is necessary, causing the motor to operate; or the starting button may be locked in depressed position as long as desired, making it unnecessary to keep a pressure thereon throughout the operation. To stop the recording, the starting button is released, stopping the motor, and the device is ready for any further operation in like manner until the record is used up, as may be indicated by the position of the lock and play-back control knob with reference to the scale 30 on the side of the slot 29. When one disc is used up, it may be removed and placed in the storage

compartment from which another fresh disc may be removed for recharging the device.

When it is desired to play back any part of a record, the recording needle is replaced by a play-back needle and the arm set to the position desired on the disc, and the starter button is pushed down to start the motor, causing the record to be played back.

The above device is only one form, described and shown for purposes of illustration of this invention, and many modifications in the several parts and in their arrangement may be made without departing from the spirit and scope of this invention, as defined in the appended claims. For example, for the spring motor there may be substituted an electrical or magnetic motor; the disc record and needle type of sound head may be replaced by a magnetic wire record and a magnetic sound head, etc., without changing the combination as a whole.

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

What is claimed is:

1. A recording device comprising a case having a hinged cover with a grated opening therein in its upper portion and a spring motor mounted on the inside thereof in its mid portion, a motor winding shaft extending through said cover and a winding key attached thereto, said winding key being foldable so as to dispose of the projecting handle by insertion into a pocket formed in said cover when not in use, a sound tube having its large end opening registering with said grated opening in the cover when the case is closed and pivotally mounted on the rear wall of said case concentrically with said grated opening, and having a flattened portion extending along the back of the case, a diaphragm unit mounted in the front wall of said flattened portion including a diaphragm frame with a needle arm fastened to it at one end and having means for holding a needle at its other end, its middle portion being adjustably fastened to the center of the diaphragm, said motor having a rotor drive plate and a square spindle for mounting a recording disc, and locking means on said spindle for holding the recording disc in place thereon, an arcuate slot in the rear wall of said case concentric with the pivot of the sound tube and graduated to indicate the position of the needle with respect to its travel over the recording disc, a lock and play-back conrol knob having a stem passed through said slot and threaded into the back of the flattened portion of said sound tube, a tensioned roller mounted on said flattened portion and pressing against the rear wall of said case for tensioning the needle against the recording disc, and a compartment for extra recording discs partitioned off at the lower portion of the rear wall of said case.

2. Apparatus of the class described comprising a case having a cover, a backwall with associated end and side walls, said cover hingedly mounted on one of said side walls, a turntable rotatably mounted on the inside of said cover and adapted to receive a recording disc for rotation therewith, a substantially circular opening in said cover laterally off-set from said turntable and a hollow arm positioned in said case with one end in substantially concentric communication with said opening, said arm having a pivotal connection to said backwall in axial alignment with said opening and carrying a sound conversion device adapted to cooperate with said recording disc on said turntable, whereby said disc and turntable are readily accessible and free of said hollow arm upon said opening cover.

3. A portable sound recording device characterized by ready accessibility of its component parts, comprising a case having a cover, a backwall with associated end and side walls, said cover hingedly mounted on one of said sidewalls, a turntable rotatably mounted on the inside of said cover and adapted to receive a recording disc having a sound track for rotation therewith, said cover provided with a substantially circular opening laterally off-set from said turntable, a hollow arm having an enlarged open end and a smaller closed end in said case, said open end in substantially concentric alignment and coincidence with said circular opening, a sound conversion device supported by said hollow arm over said smaller end adapted to contact and follow said sound track, a pivotal connection supporting said hollow arm on said backwall, said pivotal connection being substantially in axial alignment with the circular opening in said cover and spring biased roller means mounted on the smaller end of said arm adapted to bear upon the surface of said backwall to urge said sound conversion device into contact with and to follow said sound track whereby, as said turntable rotates, said sound conversion device follows said sound track on said disc, the enlarged open end of said hollow arm rotates about said pivotal connection in substantial alignment witht he opening in said cover.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,069,784	Hodges	Aug. 12, 1913
1,146,418	Fuller	July 13, 1915
1,171,082	Baer	Feb. 8, 1916
1,653,410	Pepin	Dec. 20, 1927
1,734,172	Madsen	Nov. 5, 1929
1,766,992	Grass	June 24, 1930
2,053,108	Rabald	Sept. 1, 1936